

WHAT IS CLAIMED IS:

1. A communication apparatus for communicating speech and data, the apparatus comprising:

frame controlling means for integrating speech
5 frames, being speech signals made into frames, and data
frames, being data made into frames, into integrated frames
and performing routing control of the speech frames, the
data frames, and the integrated frames;

input processing means for storing and managing at
10 least one of the three types of frames of the speech frames,
the data frames, and the integrated frames; and

output processing means for storing and managing
the frames transferred, setting a bandwidth ratio of the
frames dynamically, and transmitting the speech frames, the
15 data frames, and the integrated frames from on lines.

2. The communication apparatus according to claim 1,
wherein the frame controlling means generates the
integrated frames by causing the speech frames to occupy
20 bandwidth which the speech frames use and assigning the
rest of the bandwidth to the data frames.

3. The communication apparatus according to claim 1,
wherein the frame controlling means generates the
25 integrated frames by creating priority information fields
for the data frames in which high priority corresponds to
connection-mode communication and low priority corresponds

to connectionless-mode communication.

4. The communication apparatus according to claim 1,
wherein the frame controlling means generates the
5 integrated frames by creating an information field for
controlling common line signals.

5. The communication apparatus according to claim 1,
wherein the input processing means has two storage areas
10 and stores the frames by switching the storage areas every
cycle.

6. The communication apparatus according to claim 1,
wherein the frame controlling means performs the routing
15 control and a switching transfer of the frames to the
output processing means on the basis of information
regarding the frames.

7. The communication apparatus according to claim 1,
20 wherein the frame controlling means performs the routing
control and generates transfer scheduling information, on
the basis of information regarding the frames.

8. The communication apparatus according to claim 7,
25 wherein the input processing means transfers the frames to
the output processing means on the basis of the transfer
scheduling information.

9. The communication apparatus according to claim 1,
wherein the output processing means generates and outputs
one representative frame when the data frames transferred
5 include identical frames.

10. The communication apparatus according to claim
9, wherein the frame controlling means generates the
plurality of identical frames when the frame controlling
10 means receives the representative frame.

11. A communication system for communicating speech
and data, the system comprising:

a telephone switching system;
15 a network connecting device for performing a
connecting process between networks; and
a communication apparatus comprising frame
controlling means for integrating speech frames, being
speech signals made into frames, and data frames, being
20 data made into frames, into integrated frames and
performing routing control of the speech frames, the data
frames, and the integrated frames, input processing means
for storing and managing at least one of the three types of
frames of the speech frames, the data frames, and the
25 integrated frames, and output processing means for storing
and managing the frames transferred, setting a bandwidth
ratio of the frames dynamically, and transmitting the

speech frames, the data frames, and the integrated frames
from on lines and connected to at least one of an office
telephone interface line of the telephone switching system,
an office data interface line of the network connecting
5 device, and an interoffice trunk line.

12. The communication system according to claim 11,
wherein the frame controlling means generates the
integrated frames by causing the speech frames to occupy
10 bandwidth which the speech frames use and assigning the
rest of the bandwidth to the data frames.

13. The communication system according to claim 11,
wherein the frame controlling means generates the
15 integrated frames by creating priority information fields
for the data frames in which high priority corresponds to
connection-mode communication and low priority corresponds
to connectionless-mode communication.

20 14. The communication system according to claim 11,
wherein the frame controlling means generates the
integrated frames by creating an information field for
controlling common line signals.

25 15. The communication system according to claim 11,
wherein the input processing means has two storage areas
and stores the frames by switching the storage areas every

cycle.

16. The communication system according to claim 11,
wherein the frame controlling means performs the routing
5 control and a switching transfer of the frames to the
output processing means on the basis of information
regarding the frames.

17. The communication system according to claim 11,
10 wherein the frame controlling means performs the routing
control and generates transfer scheduling information, on
the basis of information regarding the frames.

18. The communication system according to claim 17,
15 wherein the input processing means transfers the frames to
the output processing means on the basis of the transfer
scheduling information.

19. The communication system according to claim 11,
20 wherein the output processing means generates and outputs
one representative frame when the data frames transferred
include identical frames.

20. The communication system according to claim 19,
25 wherein the frame controlling means generates the plurality
of identical frames when the frame controlling means
receives the representative frame.

21. A method for integrating speech and data for communicating by integrating and controlling speech and data, the method comprising:

5 the step of integrating speech frames, being speech signals made into frames, and data frames, being data made into frames, into integrated frames;

 the step as an input-side process of storing and managing at least one of the three types of frames of the
10 speech frames, the data frames, and the integrated frames;

 the step of performing routing control of the speech frames, the data frames, and the integrated frames; and

 the step as an output-side process of storing and
15 managing the frames transferred, setting a bandwidth ratio of the frames dynamically, and transmitting the speech frames, the data frames, and the integrated frames from on lines.

20 22. The method for integrating speech and data according to claim 21, wherein the integrated frames are generated by causing the speech frames to occupy bandwidth which the speech frames use and assigning the rest of the bandwidth to the data frames.

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 23. The method for integrating speech and data according to claim 21, wherein the integrated frames are

generated by creating priority information fields for the data frames in which high priority corresponds to connection-mode communication and low priority corresponds to connectionless-mode communication.

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24. The method for integrating speech and data according to claim 21, wherein the integrated frames are generated by creating an information field for controlling common line signals.

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25. The method for integrating speech and data according to claim 21, wherein the frames are stored as the input-side process by switching two storage areas every cycle.

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26. The method for integrating speech and data according to claim 21, wherein the routing control is performed and a switching transfer of the frames is performed for the output-side process, on the basis of information regarding the frames.

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27. The method for integrating speech and data according to claim 21, wherein the routing control is performed and transfer scheduling information is generated, on the basis of information regarding the frames.

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28. The method for integrating speech and data

according to claim 27, wherein the frames are transferred as the input-side process for the output-side process on the basis of the transfer scheduling information.

5 29. The method for integrating speech and data according to claim 21, wherein one representative frame is generated and output as the output-side process when the data frames transferred include identical frames.

10 30. The method for integrating speech and data according to claim 29, wherein the plurality of identical frames are generated if the representative frame is received at the time of the routing control.